

### REMARKS

The Applicants respectfully request reconsideration of this application in view of the above amendments and the following remarks.

#### **35 U.S.C. §103(a) Rejection – Miyasaka, Mayer**

Claims 5, 29, 30, 33 and 34 have been rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent No. 5,869,208 to Miyasaka (hereinafter “Miyasaka”) in view of U.S. Patent No. 6,379,842 to Mayer (hereinafter “Mayer”). Without admitting that these references could or should be combined, Applicants respectfully submit that the present claims are allowable over Miyasaka and Mayer.

Claim 5 recites:

*“A method of making a rechargeable lithium battery comprising:*

*forming a positive electrode by physically **mixing a positive active material with particles of an additive** to prepare a positive active material composition, the positive active material being selected from the group consisting of lithiated transition metal compounds, and **the additive at least one selected from the group consisting of Si, B, Ge, Ga, Ca, Sr, Ba, and oxides thereof**, coating the positive active material composition on a current collector after heat treating to place the positive active material in a uniform crystalline form, and drying the current collector coated with **the positive active material composition including the particles of the additive mixed in the positive active material**;*

*forming a negative electrode including a carbonaceous material as an active material;*

*preparing an electrolyte including an organic solvent including a lithium salt dissolved in the organic solvent;*

*wherein an amount of the additive is 1.0 to 10 wt% of the positive active material, and the lithiated transition metal compound is selected from the group consisting of formulas 1 to 13;*

$Li_xMnA_2$	(1)
$Li_xMnO_{2-z}A_z$	(2)
$Li_xMn_{1-y}M'_yA_2$	(3)
$Li_xMn_2A_4$	(4)
$Li_xMn_2O_{4-z}A_z$	(5)
$Li_xMn_{2-y}M'_yA_4$	(6)
$Li_xBA_2$	(7)
$Li_xBO_{2-z}A_z$	(8)
$Li_xB_{1-y}M''_yA_2$	(9)
$Li_xB_{1-y}M''_yO_{2-z}A_z$	(10)
$Li_xNiCoA_2$	(11)
$Li_xNiCoO_{2-z}A_z$	(12)
$Li_xNi_{1-y-z}Co_yM''_zA_2$	(13)

wherein  $1.0 \leq x \leq 1.1$ ,  $0.01 \leq y \leq 0.1$ ,  $0.01 \leq z \leq 0.5$ ,  $M'$  is at least one transition metal or lanthanide metal selected from the group consisting of Al, Cr, Co, Mg, La, Ce, Sr and V,  $M''$  is at least one transition metal or lanthanide metal selected from the group consisting of Al, Cr, Mn, Fe, Mg, La, Ce, Sr and V, A is selected from O, F, S or P, and B is Ni or Co".

Initially, in the Response to Arguments section appearing on pages 9-10 of the present patent application, the Examiner has made remarks about the language previously used to recite the additive in claim 5. Applicants have amended claim 5 to make it clear that claim 5 is **not** limited to having both an element (i.e., at least one of Si, B, Ge, Ga, Ca, Sr, Ba) **and** an oxide of one of these elements. Although this may be the case, it is not required.

Turning now to the rejection, Applicants respectfully submit that Miyasaka and Mayer do not disclose the limitations of claim 5, or render them obvious.

Miyasaka discusses in part a lithium ion secondary battery. See e.g., the Title. However, the Examiner has already admitted that "Miyasaka is silent to an electrode additive of at least one of Si, B, Ti, Ga, Ge, Ca, Mg, Sr and Ba". See e.g., the middle of page 3 of the present Office Action.

Rather, the Examiner has apparently relied upon Mayer to reject the additive of claim 5. In particular, the Examiner has asserted that "Mayer teaches the employment of **magnesium**

(emphasis added) in lithium oxide electrode materials in the amount of 5%", and references the Abstract of Mayer. See e.g., the middle of page 3 of the present Office Action.

However, Applicants respectfully submit that the discussion in Mayer of including **magnesium** is insufficient to reject the limitation of claim 5 that *"the additive at least one selected from the group consisting of Si, B, Ge, Ga, Ca, Sr, Ba, and oxides thereof."* Magnesium is not one selected from Si, B, Ge, Ga, Ca, Sr, Ba, and oxides thereof.

Moreover, the Examiner has noted elsewhere in the Office Action that the Abstract of Mayer discusses silicon. In particular, the Abstract discusses that lithium nickel cobalt metal oxides have the general formula  $\text{Li}_x\text{Ni}_y\text{CO}_2\text{M}_n\text{O}_2$ , where the M may include silicon. However, as understood by Applicants, "M" in this formula represents an **element** of the lithium nickel cobalt metal oxide compound. As understood by Applicants, "M" does not represent **particles of an additive mixed** with the lithium nickel cobalt metal oxides. Accordingly, Mayer does not disclose or render obvious *"physically mixing a positive active material with particles of an additive"* or *"drying the current collector coated with the positive active material composition including the particles of the additive mixed in the positive active material"*.

Accordingly, independent claim 5 and its dependent claims are believed to be allowable over Miyasaka and Mayer.

New independent claim 43 and its dependent claims are believed to be allowable over Miyasaka and Mayer for similar reasons.

### 35 U.S.C. §103(a) Rejection – Saidi, Mayer

Claims 5, 29, 30, 33 and 34 have been rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent No. 5,851,696 issued to Saidi et al. (hereinafter "Saidi") in view of Mayer. Without admitting that these references could or should be combined, Applicants respectfully submit that the present claims are allowable over Saidi and Mayer.

Claim 5 recites in part “*physically **mixing** a positive active material with **particles of an additive** to prepare a positive active material composition*” and “*drying the current collector coated with the positive active material composition including the **particles of the additive mixed in the positive active material***”.

Saidi and Mayer do not disclose these limitations or render them obvious.

Saidi discusses in part a rechargeable lithium battery. See e.g., the Title. However, the Examiner has already admitted that “Saidi is silent to an electrode additive of at least one of Si, B, Ti, Ga, Ge, Ca, Mg, Sr and Ba”. See e.g., the middle of page 5 of the present Office Action.

Rather, the Examiner has apparently relied upon Mayer to reject the additive of claim 5. In particular, the Examiner has asserted that “Mayer teaches the employment of **silicon** (emphasis added) in lithium oxide electrode materials in the amount of 5%”, and references the Abstract of Mayer. See e.g., the middle of page 5 of the present Office Action.

As discussed above, the Abstract of Mayer discusses that lithium nickel cobalt metal oxides have the general formula  $\text{Li}_x\text{Ni}_y\text{CO}_2\text{M}_n\text{O}_2$ , where the M may include silicon. However, as understood by Applicants, “M” in this formula represents an **element** of the lithium nickel cobalt metal oxide compound. “M” does not represent **particles of an additive mixed** with the lithium nickel cobalt metal oxides. Accordingly, Mayer does not disclose or render obvious “*physically **mixing** a positive active material with **particles of an additive**” or “*drying the current collector coated with the positive active material composition including the **particles of the additive mixed in the positive active material***”.*

Accordingly, independent claim 5 and its dependent claims are believed to be allowable over Saidi and Mayer.

New independent claim 43 and its dependent claims are believed to be allowable over Saidi and Mayer for similar reasons.

### 35 U.S.C. §103(a) Rejection – Saidi, Mayer, Matsubara

Claim 35 has been rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Saidi in view of Mayer and further in view of U.S. Publication No. 2001/0010807 of Matsubara (hereinafter “Matsubara”). Without admitting that these references could or should be combined, Applicants respectfully submit that the present claims are allowable over Saidi, Mayer, and Matsubara.

Claim 35 depends from independent claim 5 and includes all of the limitations of claim 5. As discussed above, Saidi and Mayer do not disclose the limitations of claim 5. The Examiner has not pointed out where Matsubara discloses all of these missing limitations, and as understood by Applicants, Matsubara does not remedy **all** of what is missing from Saidi and Mayer. Accordingly, Applicants respectfully submit that independent claim 5 and dependent claim 35 are believed to be allowable over Saidi, Mayer, and Matsubara. Applicants elect at this time not to address other aspects of the rejection of dependent claim 35.

### 35 U.S.C. §103(a) Rejection – Goshu, Mayer

Claims 5, 9 and 29-32 have been rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent No. 6,589,694 to Goshu et al. (hereinafter “Goshu”) and further in view of Mayer. Without admitting that these references could or should be combined, Applicants respectfully submit that the present claims are allowable over Goshu and Mayer.

Claim 5 recites in part “*the additive at least one selected from the group consisting of **Si, B, Ge, Ga, Ca, Sr, Ba, and oxides thereof**, “physically **mixing** a positive active material with **particles of an additive** to prepare a positive active material composition”, and “drying the current collector coated with the positive active material composition including the **particles of the additive mixed in the positive active material**”.*

Goshu and Mayer do not disclose these limitations or render them obvious.

Gosho discusses in part a positive electrode active material, a positive electrode active material composition, and a lithium ion secondary battery. See e.g., the Title. However, the Examiner has already admitted that “Gosho is silent to an electrode additive of at least one of Si, B, Ti, Ga, Ge, Ca, Mg, Sr and Ba”. See e.g., the bottom of page 8 of the present Office Action.

Rather, the Examiner has apparently relied upon Mayer to reject the additive of claim 5. In particular, the Examiner has asserted that “Mayer teaches the employment of *magnesium* (emphasis added) in lithium oxide electrode materials in the amount of 5%”, and references the Abstract of Mayer. See e.g., the top of page 9 of the present Office Action.

However, magnesium is not one selected from Si, B, Ge, Ga, Ca, Sr, Ba, and oxides thereof.

Furthermore, as discussed above, the silicon mentioned in the Abstract of Mayer is not **particles of an additive mixed in a positive active material**.

Accordingly, independent claim 5 and its dependent claims are believed to be allowable over Gosho and Mayer.

New independent claim 43 and its dependent claims are believed to be allowable over Gosho and Mayer for similar reasons.

### **Conclusion**

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the cited art of record and are in condition for allowance. Applicants respectfully request that the rejections be withdrawn and the claims be allowed at the earliest possible date.

**Request For An Extension Of Time**

The Applicants respectfully petition for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17 for such an extension.

**Charge Our Deposit Account**

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

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Date:

3/23/09

By:

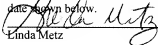
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Linda Metz

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